Auroral Precipitation Models: A Potential Future Topic for GGCM Metrics and Validation

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All of you – the Audience

Image taken by Zoltan Kenwell
3 May 2010, Near St. Paul, Alberta, Canada
Existing Models

• Hardy model
• Ovation model – Newell et al.

CCMC is collaborating with AFWA in validating both of them (Hardy and Ovation).

• Ovation Prime – Newell et al. (running at CCMC, run-on-request soon)
• Zhang and Paxton Auroral Model
• Combining a Global MHD and an inner magnetosphere model to determine the boundaries (one already running at CCMC)
• ....
Data for Validation

• DMSP particle data (not for the models which are based on the DMSP data)

• Auroral imaging data
  IMAGE/FUV, May 2000-Dec, 2005 Stephen Mende/Harald Frey
  DMSP/SUSSI, 2005 – present Larry Paxton/Yongliang Zhang

• Other data
  Particle data (local, better determination of boundaries) versus Imaging data (global, but compromises in boundary determination?) need both!
Potential events for contemplation

• One Quiet time
• One during Steady Magnetospheric Convection (SMC) period
• One during active substorm period
• One during superstorm time

Working with experts in selecting events. But we’d like to hear your suggestions as well.
Results from Ovation Prime
Four Types

5 April 2010 @ 1500 UT
Results from Ovation Prime
Sum of all four types
Auroral boundaries from CCMC models

06/21/2010 Time = 08:24:00

Northern Hemisphere